

CLAIM AMENDMENTS

1-43. (Canceled)

44. (Currently Amended) A machine readable storage medium comprising a program containing a set of instructions for causing a cell screening system to execute procedures for detecting the translocation of a cellular component of interest between a first cellular compartment and a second cellular compartment on or within individual cells on an array of locations which contain multiple cells, **wherein the first cellular compartment and the second cellular compartment are different, and** wherein the procedures comprise:

- a) defining a first cellular compartment mask and a second cellular compartment mask in multiple individual cells on the array of locations from luminescent signals obtained from a plurality of luminescent reporter molecules on or in the individual cells, wherein the plurality of luminescent reporter molecules comprises at least a first luminescent reporter molecule **capable of identifying** to identify the individual cells, and at least a second luminescent reporter molecule **capable of reporting** to report on a cellular component of interest, wherein luminescent signals from the at least first and the at least second luminescent reporter molecules are optically distinguishable;
- b) determining an intensity of the luminescent signals from the at least second luminescent reporter molecule in the first cellular compartment mask and the second cellular compartment mask; and
- c) determining one or both of the following:
 - i) a ratio of the intensity of the luminescent signals from the at least second luminescent reporter molecule in the first cellular compartment mask and the second cellular compartment mask; and
 - ii) a difference of the intensity of the luminescent signals from the at least second luminescent reporter molecule in the first cellular compartment mask and the second cellular compartment mask;

wherein the ratio of the intensity of the luminescent signals from the at least second luminescent reporter molecule in the first cellular compartment mask and the second cellular compartment mask and/or the difference of the intensity of the luminescent signals from the at least second luminescent reporter molecule in the first cellular compartment mask and the

second cellular compartment mask provides a measure of the translocation of the cellular component of interest between the first cellular compartment and the second cellular compartment on or within the individual cells, **and**

wherein the program results are displayed to a user.

45. (Previously presented) The machine readable storage medium of claim 44, wherein the procedures further comprise storing an image of each individual cell.

46. (Previously presented) The machine readable storage medium of claim 44, wherein the procedures further comprise storing data obtained in a database.

47. (Previously presented) The machine readable storage medium of claim 46, wherein the data stored in the database can be reviewed for individual cells.

48. (Previously presented) The machine readable storage medium of claim 46, wherein the data stored in the database can be reviewed for individual locations containing cells.

49. (Previously presented) The machine readable storage medium of claim 44, wherein the procedures further comprise generating summary data.

50. (Previously presented) The machine readable storage medium of claim 44, wherein the first cellular compartment and the second cellular compartment consist of a cell nucleus and a cell cytoplasm, and wherein the translocation comprises a translocation between the cell cytoplasm and the cell nucleus.

51. (Canceled)

52. (Previously presented) The machine readable storage medium of claim 44, wherein the first cellular compartment and the second cellular compartment consist of a cell cytoplasm and a cell membrane, and wherein the translocation comprises a translocation between the cell cytoplasm and the cell membrane.

53. (Previously presented) The machine readable storage medium of claim 44 wherein the first and second luminescent reporter molecules comprise fluorescent reporter molecules.

54. (Previously presented) The machine readable storage medium of claim 44 wherein the cellular component of interest is a protein.

55. (Previously presented) The machine readable storage medium of claim 44 wherein the procedures are used to test an effect of a test compound on translocation of the cellular component of interest between the first cellular compartment and the second cellular compartment on or within the individual cells.

56. (Previously presented) The machine readable storage medium of claim 55, wherein the individual cells are live cells, and wherein steps (a) through (c) are performed at multiple time points.